DOCUMENT RESUME

ED 283 812 SP 029 013

AUTHOR Ellis, Nancy
TITLE Collaborative Interaction as Support for Teacher Change.
PUB DATE Apr 86
NOTE 41p.; Paper presented at the Annual Meeting of American Educational Research Association (San Francisco, CA, April 16-22, 1986).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Classroom Techniques; Elementary Secondary Education; *Feedback; *Instructional Innovation; *Interaction Process Analysis; Peer Relationship; *Program Implementation; Small Group Instruction; *Teacher Behavior; Teacher Student Relationship

ABSTRACT

This study examined the specific factors that help teachers learn to implement innovations requiring non-routine teacher behaviors. Questions focused on the type of support teachers must have in order to make changes in their instructional approach. Thirteen teachers in the San Francisco area were observed as they attempted to teach the same innovative program of instruction that required multiple, heterogeneous student groupings and a variety of materials. All classrooms contained a large percentage of Spanish-speaking and bilingual students, and in addition, several classrooms contained children who were recent immigrants from Asian countries. The program required teahers to learn a wide range of new behaviors and to work with students in small groups. It was hypothesized that teachers would depend to a large extent on lateral communications between teachers and their assistants and others, and the quality of feedback received from consultants and supervisors. On a Management Systems Checklist, the teachers were asked to check routine and non-routine topics they discussed with their classroom assistants. School and district-level supportive supervisors were trained to observe teachers and to give feedback consistent with that given by the consultants. Data on teacher behaviors were based on observations by trained researchers. An analysis of resulting data indicated that after presenting an innovative instructional model and theory to teachers, staff developers should provide training that includes focused observations and targeted feedback. (JD)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED283812

COLLABORATIVE INTERACTION AS SUPPORT FOR TEACHER CHANGE

Nancy Ellis
Stanford University
April, 1986

Paper presented at the Annual Meeting of the American Educational Research Association in San Francisco, CA, April 16 - 22, 1986

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

N. Ellis

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

SP 029 013

BEST COPY AVAILABLE

INTRODUCTION

Need for improvement in classroom teaching. If schools are to meet demands for improved education, some changes will have to be made by teachers at the classroom level. Inservice teacher training can help teachers change what they do in classrooms. In a recent article, M. Bierly and D.C. Berliner (1982) proposed:

> If teachers are the cause of the problem, the logic goes, then teachers can effect a remedy. The result has been increased pressure for staff development programs so that teachers may learn how to do their jobs better.

Failure of many inservice programs to affect change or improvement in classroom teaching. Even though nearly every school district in the country schedules release time each year for inservice teacher training, studies show that a majority of such inservice programs fail to cause educational change or improvement (K. Howey & B. Joyce, 1978; M. McLaughlin & Marsh, 1978; Rubin, 1978). Inservice training programs call upon teachers to implement improved teaching methods, new curricula, and/or new teaching technologies, recommended in many cases by researchers who devise schemes for improved education on the basis of empirical findings. During the months following inservice teacher training, schools rarely provide the follow-up support teachers need for adoption of innovations. Fullan (1982) concludes an extensive review of educational change literature with the assertion,

> The cases of success (successful implementation) we examined consisted of systems of peer-based interaction and feedback among teachers combined with external assistance. Large numbers of people will be affected only when the system of support and interaction becomes established as a regular, normal part of the ongoing work of schools.

What sort of peer-based interaction, feedback, and external assistance are helpful to teachers? In the present study I was interested in specific factors that help teachers learn to implement innovations that require non-routine teacher behaviors. I asked questions concerning the sort of support teachers must have in order to make changes in their instructional approach.

CONCEPTUAL FRAMEWORK

I drew from organizational sociology to develop a conceptual framework to explain how peer-based interaction and feedback among teachers can help reduce teacher uncertainty and thereby provide opportunities for successful implementation of innovations requiring non-routine teacher behaviors.

I applied an organic sociological model proposed by Charles Perrow (1967) for describing the sociological structure of schools as organizations. According to Perrow, the organization's capacity to process information depends upon the match between management style and complexity of the task technology and raw material. Cohen, Deal, Meyer, and Scott (1973, p. 7) applied Perrow's terms to classrooms by

defining the technology as curriculum, instructional methods, teaching techniques, and curriculum materials. When a great variety of curriculum materials is used, the teaching technology is more complex than it is when the variety of curriculum materials is small.

Raw material, in Perrow's terms, can be redefined as the student body in an educational setting. When students are heterogeneously grouped and when they are grouped in several small groups, the raw material is more ambiguous and more varied than it is when students are homogeneously grouped in a single large group.

In such a complex environment, differentiation in materials and groupings of people require the processing of a large quantity of information. Many exceptional cases require non-routine decision-making which, in turn, require additional quantities of information-processing, problem-solving, and the application of theoretical principles to particular cases. Thus, as task technology becomes more complex and decisions less routine and as raw material becomes less well understood, less predictable, and less uniform, interdependence of groups should be higher and coordination should occur through worker interaction. According to Perrow, there should be a shift from direct authority to delegated authority and an increase in the use of lateral relations as communication channels as the task

technology becomes more complex. Complex tasks require more interdependent work arrangements.

Organizational effectiveness depends on a match between the management style and the complexity of technology. Management style varies on a continuum from hierarchical to decentralized. The degree of fit between management style and technology determines the organization's capacity to process information and make decisions. In situations where the technological task is simple, direct authority and vertical channels of communication are effective. Given a complex technology, interdependence of workers and lateral communication will deal with the many exceptional cases and differentiation of materials and task structures (Perrow, 1967). More complex situations require wider, higher-level search procedures and lateral channels of communication. Interdependence and the use of lateral communication channels permit wider search procedures (March & Simon, 1958) and are more efficient for processing increased information loads (Galbraith, 1973). Thus, in more complex organizations the use of lateral communication and high levels of interdependence are expected to increase organizational effectiveness.

In this study I examined interdependence and lateral relations among teachers as they implemented a complex educational innovation. My most general hypothesis was that

there would be a positive relationship between lateral relations and the teacher's ability to implement successfully a highly uncertain and non-routine technology.

THE INSTRUCTIONAL INNOVATION

I compared variations in implementation among teachers who were similar in that they were all attempting to teach the same innovative program but who differed in their patterns of interactions with support personnel. The instructional innovation implemented by the teachers is a curriculum program which, in theoretical terms, represents a highly complex technology with multiple, heterogeneous student groupings and a variety of materials. The program required teachers to learn a wide range of new behaviors and to work with students in small groups.

The curriculum program. The curriculum program, Finding Out/Descubrimiento (E. DeAvila and S. Duncan, 1982), develops thinking skills through the teaching of science and math concepts in grades two through five to children who have diverse linguistic and academic skills. Finding Out/Descubrimiento features multiple math and science learning centers that operate simultaneously. The activities allow children who differ in cognitive development to carry out the same tasks in manners appropriate to individuals' developmental level. Each child must complete the task and a worksheet for each learning activity center.

The classroom management system. The classroom management system was developed by Elizabeth G. Cohen, Cecilia Navarrete, and others at Stanford University. Children are trained to work in cooperative groups and to take responsibility for their own and others' learning through the assignment of special roles within their small groups. Because the children can use each other as resources in the learning process, there is no need for ability or language grouping. Groups are purposely formed heterogeneously.

While children are working at their learning centers, the teacher delegates to students the authority to facilitate tasks, to make sure that their peers understand the academic tasks and complete worksheets, and to supervise clean-up. The teacher's authority is delegated to students through the use of cooperative norms and assigned roles. The teacher learns to discard routine behaviors, such as direct instruction and telling students how to do the tasks, and instead learns to perform new, non-routine behaviors.

New, non-routine teaching behaviors appropriate for the teacher to use at learning activity centers include giving specific feedback, assigning competence to low-status students, stimulating thinking and problem-solving, and extending activities. The teacher must learn to use these

teaching behaviors on the spot to manage several small groups at diverse learning activity centers simultaneously. For most teachers these non-routine teaching techniques are unfamiliar behaviors. The techniques are non-routine because they require on-the-spot decision-making relevant to the situation. The constellation of non-routine teaching techniques can be called indirect instructional techniques because the teacher allows students to solve problems, practice skills, and discover information themselves. During the learning center activities the teacher refrains from instructing directly.

Besides managing learning center activities, the teacher presents an orientation for the whole class at the beginning of each lesson and a whole-class wrap-up at the end of learning center activities. Because children are grouped together as a whole class during orientation and wrap-up, orientation and wrapup settings are more routine and usually more familiar settings for teachers to manage than small-group learning center activities.

Thus, Finding Out/Descubrimiento is a complex program across two dimensions of the learning centers: groupings are heterogeneous and materials are diverse. Orientation and wrap-up are less complex because the teacher is then in charge of only one whole-class group and students do not work with a great variety of materials.

The supervisory model. The supervisory model for implementation mandated by the Stanford University developers requires that teachers are observed regularly throughout the year and that structured feedback is given to teachers. Observations of teachers and feedback were provided by Stanford consultants and by supportive supervisors within the school and/or district who were trained by Stanford consultants. Each feedback session for teachers was based on a minimum of six ten-minute observations. Three of the ten-minute observations for feedback sessions were made during whole-class instruction (orientation and wrap-up) and three observations were made during small-group instruction (learning center activities). Frequencies of various teacher behaviors were aggregated and graphed so they were easy to understand visually (see Appendix A for sample teacher feedback graph). Stanford consultants carefully explained the difference between "hovering" over students and non-routine behaviors such as giving students specific feedback. Teachers were encouraged to perform non-routine behaviors especially during learning center activities. They were also encouraged to avoid more routine, direct helping and disciplining behaviors, especially during learning center activities.

Classroom assistants. The classroom management model for implementation mandated by Stanford requires that every

teacher has a classroom assistant during the time the curriculum program is implemented. Teachers are trained to observe their assistants, to meet with them regularly, to use a meeting agenda organizer called a "Meeting Tamer" (see Appendix B), and to give their assistants feedback on their classroom performance.

Feedback given by the teacher to the assistant is based on the teacher's classroom observations of the assistant. Teachers were trained to use an observation instrument similar to the Teacher Observation Instrument which was used as the research instrument in this study (see Appendix D).

The Meeting Tamer is an agenda organizer for meetings dealing with features of the curriculum program. Both the Teacher Observation Instrument and the Meeting Tamer are designed to focus conversation in the direction of non-routine teaching behaviors, which are the most challenging aspects of implementation.

METHODOLOGY

Sample. Thirteen teachers were observed in five schools and three districts in the San Francisco Bay Area. All classrooms contained a large percentage of Spanish-speaking and bilingual students. Several classrooms contained children who were recent immigrants from Asian countries.

Instruments for data collection: The management systems checklist and the teacher observation instrument. To gather data for assessing the amount of organizational support received by teachers within their school and district environments, I asked teachers to fill out a Management Systems Checklist once every two weeks (see Appendix C) for sixteen weeks. On the checklist teachers recorded estimates of the number of meetings they had held with principals, teaching assistants, peer teachers, and supervisors during the previous two weeks.

On the Management Systems Checklist teachers were asked to check routine and non-routine topics they had discussed with their classroom assistants during the previous two weeks. Some topics such as: materials, worksheets, students on or off task, directly helping students ("hovering"), learning centers, activity cards, and discipline problems related to more routine teacher behaviors. Other topics such as: individual student needs, student problem-solving, multiple abilities, rate of student talking and working together, stimulating thinking, and extending activites related to more non-routine teacher behaviors.

School and district-level supportive supervisors were trained to observe teachers and to give the same kind of feedback Stanford consultants gave. I used Stanford records to determine the frequency with which teachers received

feedback from Stanford consultants. In a large percentage of cases, supportive supervisors were trained by Stanford consultants at the time when the Stanford supervisors gave feedback to teachers. Therefore, teachers' meetings with supportive supervisors were often one and the same as meetings with Stanford consultants.

Data on teacher behaviors was based on observations gathered by trained researchers who observed each teacher twenty times for ten minutes each time. Teachers' speech acts were categorized and tallied (see Appendix D for the Teacher Observation Instrument). Ten of the twenty ten-minute observations were made during whole-group instruction and ten of the observations were made during small-group instruction. Observers achieved 90% reliability with the observation instrument before their observations were included in the data.

RESULTS

Results of the study are presented as answers to two main questions:

1. What forms of lateral communication are associated with an increase in teachers' use of non-routine behaviors in complex, small-group settings?

2. What forms of lateral communication are associated with a decrease in teachers' use of inappropriate, routine behaviors in complex, small-group settings?

Non-routine behaviors are not necessarily highly intercorrelated. Nonetheless, they are all important because they represent aspects of the program that are very difficult for teachers to learn. I constructed an index for Non-Routine Teaching Behaviors from the following items on the Teacher Observation Instrument: Teacher Talks about Thinking, Teacher Extends Activities, Teacher Gives Feedback, and Teacher Assigns Specific Competence to Low-Status Children. To construct the index, I added the number of non-routine teacher behaviors across each ten-minute observation for each teacher. Then I calculated each teacher's average rate of performance of non-routine behaviors.

Question 1: What forms of lateral communication are associated with teachers' use of non-routine behaviors in small-group, complex settings? Table I presents the Spearman rank correlation coefficients (Spearman rho) of the frequencies of various kinds of meetings that were reported by teachers to have taken place with the index of average rates of various non-routine teacher behaviors. This table only displays data collected during small-group instruction. Data on the same non-routine teacher behaviors was also collected during whole-class instruction. For the present study, the distinction between small-group and whole-class instruction was kept because the use of non-routine teaching

behaviors in small groups is the most uncertain task of all. Examination of Table I shows that there are only two statistically significant positive relationships of lateral communication with non-routine teaching behaviors. One item refers to the frequency with which teachers had feedback from Stanford consultants and the other refers to the frequency with which teachers met with their supportive supervisor.

FREQUENCIES OF LATERAL COMMUNICATION	INDEX OF NON-ROUTINE TEACHER BEHAVIORS IN SMALL-GROUP SETTINGS
LATERAL COMMUNICATION	CORRELATIONAL RELATIONSHIP OF LATERAL COMMUNICATION WITH INDEX OF NON-ROUTINE BEHAVIORS IN SMALL-GROUP CLASSROOM SETTING
	SPEARMAN RHO
Teacher-Principal (Principal observed teacher and/or met with teacher)	.058
Teacher-Teacher (Teachers met and/or used Meeting Tamer)	.102
Teacher-Assistant (Teacher met with Assistant)	-.571*
Teacher-Supervisor (Teacher met with Supervisor)	.573*
Total Lateral Communication at School and District Level (Frequency of Meetings)	-.217
Feedback Meetings with Stanford Consultants	.573*

*p = .05

TABLE I. RELATIONSHIP OF FREQUENCIES OF VARIOUS KINDS OF LATERAL COMMUNICATION BETWEEN TEACHERS AND OTHERS IN THE SCHOOL SETTING WITH AN INDEX OF NON-ROUTINE TEACHER BEHAVIORS IN SMALL-GROUP CLASSROOM SETTINGS.

Contrary to my expectations, the total amount of lateral teacher communication is not associated with the rate of teacher performance of non-routine behaviors in small-group settings. In addition, the rate at which teachers met with

principals and the rate at which teachers met with other teachers in the school are unrelated to teacher performance of non-routine behaviors during small-group instruction. There is a surprisingly strong negative correlation ($p = .05$) of (1)the frequency of teachers' meetings with their assistants and (2)teachers' performance of non-routine teaching behaviors during learning centers. However, targeted feedback from Stanford consultants and feedback from trained supportive supervisors at the schools are significantly associated with teachers' performance of non-routine behaviors during small-group instruction.

At this point in the analysis, I took into consideration the topics teachers and assistants discussed in their meetings. It seemed to me that if I knew not only the frequencies of their meetings but whether or not they were talking about topics specifically related to non-routine behaviors, I might still find a positive relationship between lateral communication and non-routine teacher behaviors.

I constructed an index from the Management Systems Checklist by adding the frequency of Teacher Giving Feedback to Assistant and the frequency of Teacher Using Meeting Tamer with the Assistant (Feedback/Meeting Tamer Index). The Spearman rho correlation between the two original variables composing the index is .608, significant at the $p = .05$ level. I then combined the Feedback/Meeting Tamer Index

with various topics discussed by teachers and their assistants, multiplying the Feedback/Meeting Tamer Index for each observation by different topics discussed in teacher-assistant conversations dealing with non-routine behaviors. I examined the correlations of the Feedback/Meeting Tamer index and different topics with teachers' non-routine behaviors.

Two important non-routine teaching behaviors, Teacher Gives Specific Feedback and Teacher gives Academic Praise to Students, are closely associated with reported frequency of discussion of two topics by teachers and assistants: Student Problem-Solving and Multiple Student Abilities. I constructed two new indices, multiplying the Feedback to Assistant/Use of Meeting Tamer with Assistant Index and the reported frequency of teachers' and assistants' discussion about: (1)the topic of Student Problem-Solving and (2)the topic of Multiple Student Abilities.

Table II displays results of the Spearman rho correlations of (1)the Feedback/Meeting Tamer Index multiplied by the frequencies for the topic of Multiple Abilities and (2)the Feedback/Meeting Tamer Index multiplied by the topic of Student Problem-solving with (3)an index combining teachers' performance of the non-routine behaviors, Giving Specific Feedback to Students and Giving Academic Praise to Students, in two settings: (1)small-group classroom settings and

(2)whole-group classroom settings.

INDICES FROM MANAGEMENT SYSTEMS CHECKLIST	INDEX OF NON-ROUTINE TEACHER BEHAVIORS
INDICES OF TEACHER GIVING FEEDBACK TO ASSISTANT, TEACHER AND ASSISTANT USING MEETING TAMER, AND TEACHER AND ASSISTANT DISCUSSING TOPICS OF:	FREQUENCY OF TEACHER GIVING SPECIFIC FEEDBACK AND ACADEMIC PRAISE TO STUDENTS
	SPEARMAN RHO CORRELATION COEFFICIENTS
	IN WHOLE-CLASS SETTING: | IN SMALL-GROUP SETTING:
Student Problem-Solving	.592* | .388
Multiple Student Abilities	.616* | .415

*p = .05

TABLE II. CORRELATIONAL RELATIONSHIPS OF TEACHERS TALKING ABOUT SPECIFIC TOPICS WITH ASSISTANTS AND USING MEETING TAMER WITH NON-ROUTINE TEACHING BEHAVIORS IN WHOLE-CLASS AND SMALL-GROUP CLASSROOM SETTINGS.

The two Management Checklist Topic Indices which include teachers' and assistants' talk about the topics of Student Problem-Solving and Multiple Student Abilities are positively related to the teachers' performance of non-routine teaching behaviors in the classroom. In more complex small-group settings the relationships are positive but not significant. In less complex, whole-class settings the positive relationships are significant. It appears that it is easier to train teachers to perform

non-routine behaviors in less complex, whole-class instructional settings than in more complex, small-group settings.

Question 2: What forms of lateral communication are associated with a decrease in teachers' use of inappropriate, routine behaviors in complex, small-group settings? In the teachers' workshops and feedback sessions, Stanford consultants emphasized that teachers should decrease the frequency of directly helping students solve learning activity problems during learning center activities, and that teachers should also decrease the frequency of directly helping children complete learning center tasks. Directly helping children solve problems and complete tasks involves routines familiar to most teachers. (Instead, Stanford consultants emphasized the importance of extending children's thinking, giving them specific feedback, and allowing children to solve problems by themselves.) I predicted that there would be a negative correlation between (1)lateral communication of teachers with other adults and (2)teachers using undesirable direct helping behaviors during learning center activities. In the data I expected to find negative correlations of variables describing forms of Lateral Communication between teachers and various other adults with the variable, Teachers Directly Helping Students, in small-group classroom settings.

I used a Spearman rho test to correlate frequencies of various forms of Lateral Communication between teachers and other adults

with Teachers Directly Helping Students. Table III shows results of the Spearman rho correlations of various forms of Lateral Communication by teachers and others with Teachers Directly Helping Students in small-group classroom settings.

LATERAL COMMUNICATION

LATERAL COMMUNICATION	CORRELATIONAL RELATIONSHIP OF LATERAL COMMUNICATION with TEACHERS DIRECTLY HELPING STUDENTS IN SMALL-GROUP CLASSROOM SETTINGS SPEARMAN RHO CORRELATIONS
Teacher-Principal (Principal observed teacher and/or met with teacher)	.063
Teacher-Teacher (Teachers met and/or used Meeting Tamer)	.223
Teacher-Assistant (Teacher met with Assistant)	-.165
Teacher-Supervisor (Teacher met with Supervisor)	-.631*
Total Lateral Communication at School and District Level (Frequency of Meetings)	-.085
Feedback Meetings with Stanford Consultants	-.631*

*p = .05

TABLE III. CORRELATIONAL RELATIONSHIPS OF VARIOUS FORMS OF LATERAL TEACHER COMMUNICATION WITH TEACHERS DIRECTLY HELPING STUDENTS IN COMPLEX (SMALL-GROUP) CLASSROOM SETTINGS.

Table III shows a significant negative relationship (p = .05) between the frequency of teachers directly helping students

in small-group settings and the frequency of teachers meeting with supportive supervisors and Stanford consultants. Parallel to Table I, there are no significant relationships of other types of lateral communication with the frequency of teachers' performance of non-routine teaching behaviors in small-group settings.

DISCUSSION

Now let us turn back to Table I. Why is there a strong negative relationship between the frequency of teacher-assistant meetings and teachers' non-routine behaviors? All teachers talked with their assistants a great deal about the gathering and organization of materials. However, variation in the frequency of reported talk about materials was at least as great within observations of individual teachers as it was between teachers. Thus, it is not possible to test correlations of the frequency of talk by teachers and assistants about materials with any other variable. Nevertheless, we can speculate that teachers who talked most with their assistants about materials may have displayed the lowest frequency of non-routine behaviors. Perhaps teachers who met with their assistants most frequently talked nearly exclusively about materials. Teachers who met less frequently with their assistants may have discussed topics related to non-routine behaviors more frequently than teachers who met with their assistants more frequently but who talked only about materials.

Why do the various forms of lateral communication (except for

teachers' meetings with Stanford consultants and supportive supervisors) consistently show no relationship to teachers' behaviors in classrooms? Although no data were collected on specific topics discussed by teachers with principals or other teachers, we may surmise that the collection and organization of materials was the topic most frequently discussed by teachers with principals and other teachers. Theoretically, the topic of materials is not linked with teachers' performance of non-routine behaviors. The form of communication most closely associated in the data with teachers' performance of non-routine behaviors in complex classroom settings is the targeted feedback teachers received from Stanford consultants and supportive supervisors in the school or district. Targeted feedback was focused on helping teachers identify and exhibit non-routine behaviors and helping them discard undesirable routine behaviors.

Table II shows that when teachers gave feedback to assistants, used the Meeting Tamer to provide structure for their meetings with assistants, and discussed topics related to non-routine teaching behaviors; chances increased that those teachers would perform non-routine teaching behaviors in classroom settings. In order for teachers to give feedback to assistants, teachers were forced to watch carefully the role played by the assistants in talking to students. When teachers undertook to explain to assistants how they should talk to children, that process emphasized non-routine behaviors for the teachers themselves and probably enabled them to understand the process better.

Table III reveals that targeted feedback was strongly correlated with teachers' discarding unwanted, routine behaviors of giving direct help to students in small-group settings. Targeted feedback given by Stanford consultants was especially designed to help teachers discard unwanted routine behaviors in small-group learning activity settings. Routine behaviors are less appropriate during small-group activities than during whole-class orientation and wrapup.

Caution must be exercised in attributing correlational relationships to causation. Although I inferred the possiblity of causation, further investigations with another design could lend more credibility to causal inferences. There is a strong theoretical basis for arguing that receiving legitimate and specific evaluation will increase the performers' efforts in directions desired by the evaluator (W.R. Scott and S. Dornbusch, 1975). Furthermore, the act of working with an assistant and using observation, feedback, and the Meeting Tamer undoubtedly increased the teacher's grasp of the underlying theory. R. Lotan (1985) has shown that such a grasp will increase the probability of implementation of non-routine behaviors.

CONCLUSIONS

On the basis of this study it appears that after presenting to teachers an innovative instructional model and theory, staff developers should then provide training which includes focused

observations and targeted feedback. In the present study, initial training was more effective when it was followed by focused classroom observations and targeted feedback. Non-targeted lateral communication for teachers was not a predictor of non-routine behaviors.

What are the implications for school policy? The findings reveal that the only forms of lateral communication associated with high rates of non-routine teaching behavior are focused forms of lateral communication. From this I infer that unfocused communication about the program does not help teachers acquire more difficult skills. Most teachers need technical assistance for learning to conduct focused meetings. Technical assistance may include instruction in the use of an observation instrument for teachers to use when they observe and give feedback to their assistants. Technical assistance can also include instruction for teachers in the use of a meeting agenda organizer. (In the present study teachers made use of a Meeting Tamer agenda-setter with a list of possible topics to discuss in their meetings.) Topics on a suggested agenda organizer can be designed to include those related to more difficult aspects of the program, such as non-routine teaching behaviors. An agenda-setter helps teachers focus discussions on the broad range of program-related topics that need attention.

Schedules should allow time for teachers and their team members to participate in meetings. Too often, teachers who work in

teams and teachers who work with teaching assistants are assigned without provision of time for the teacher and team member or assistant to sit down together to reflect on non-routine aspects of the program and to plan future strategies. Effective meetings dealing with more difficult aspects of an innovation do not usually take place when teachers meet informally while they are on yard duty or at lunch.

We can conclude that in order to institute new, non-routine teacher behaviors in complex classroom settings, it is not enough to provide collegial, professional school environments where teachers have opportunities to talk with other adults in the school setting about the innovation. In addition to a sound theoretical framwork presented in the initial workshop, necessary school-level conditions for teachers' adoption of non-routine behaviors include: (1)the provision of feedback targeted on teachers' classroom performance, (2)time for teachers to meet with team members and supportive supervisors, and (3)technical assistance that helps teachers focus discussions on a range of topics related to non-routine elements of the innovative program.

Assuming that the findings are generalizable to a larger sample, what are some implications for state policy where the large goal is school improvement? If a selected program for school improvement involves elements of complex instruction (the use of a variety of materials, the use of heterogeneous grouping, and the use of multiple groups operating simultaneously), focused

lateral communication is necessary for the attainment of successful implementation of the program. The state should obtain provisions for financial resources, guidance, and technical assistance for schools and districts so that selected school improvement programs can be successfully implemented. It goes without saying that unsuccessful implementation of high-quality, innovative school improvement programs is wasteful in terms of financial cost of the attempted implementation and in terms of the expenditure of human resources.

This study suggests at least two further issues that need to be addressed. First, what is needed to help teachers exhibit high levels of non-routine teaching behaviors in complex classroom settings? For example, would analytic feedback supplemented by video tapes be more helpful than feedback based on observations alone (J Benton, in progress)? Or do teachers simply need more time to learn a new set of non-routine behaviors than that which is provided by a single year of practice? A second issue for further research hinges on the inadequacy of organizational theory in studies of schools. Organizational theory explains the relationship between task complexity and channels of communication necessary for processing information and reducing uncertainty. The goal in many organizations is to overcome uncertainty so that a product can be made efficiently. Organizational theory does not deal with reduction of uncertainty when the goal is to change behavior and to improve the analytic strategies of a practitioner who is constantly

meeting a highly demanding situation. The theory needs to be expanded beyond the notion of interdependence as a way to handle uncertainty. The expanded theory should provide a fresh look at changes in teaching behavior. Making such changes requires on-the-spot decision-making and application of new learnings by teachers in classrooms where none of the previously required responsibilities have been dropped or diminished, where the task is complex, and where the situation is highly demanding. Interdependence through lateral communication appears to be a necessary but not a sufficient condition for these changes.

REFERENCES

Bierly, M. and Berliner, D. The elementary school teacher as learner, Journal of Teacher Education, 1982, 33: 37-39.

Cohen, E.G., Deal, T.E., Meyer, J.W., & Scott, W.R. Technology and teaming in the elementary school. Sociology of Education, 1979, 52, 20-33.

De Avila, E. and Duncan, S.E. Finding out/Descubrimiento, San Rafael, California: Linguametrics Group, 1982.

Fullan, M. The meaning of educational change. New York: Teachers College, 1982.

Galbraith, J. Designing complex organizations. Reading, Mass.: Addison-Wesley, 1973.

Howey, K. and Joyce, B. A data base for future directions in in-service education. Theory into Practice, 1978, 27(3), 206-211.

Lotan, R. Understanding the theories: Training teachers for implementation of complex instructional technology. Unpublished doctoral dissertation, Stanford University, 1985.

McLaughlin, M. and Marsh,D. Staff development and school change, Teachers College Record, 1978, 80(1), 69-94.

March, J.G. and Simon, H.A. Organizations. New York: Wiley, 1958.

Perrow, C. A framework for the comparative analysis of organizations, American Sociological Review, 1967, 32: 194-208.

Rubin, The inservice education of teachers. New York: Allyn and Bacon, 1978.

Scott, W.R. and Dornbusch, S. Evaluation and Exercise of Authority. San Francisco: Jossey Bass, 1975.

APPENDIX A

TEACHER OBSERVATION INSTRUMENT FOR FEEDBACK AND GRAPHS USED FOR FEEDBACK SESSIONS

TEACHER OBSERVATION FORM

Observer_____ Date_____

Teacher_____ Time_____

FO/D Unit_____

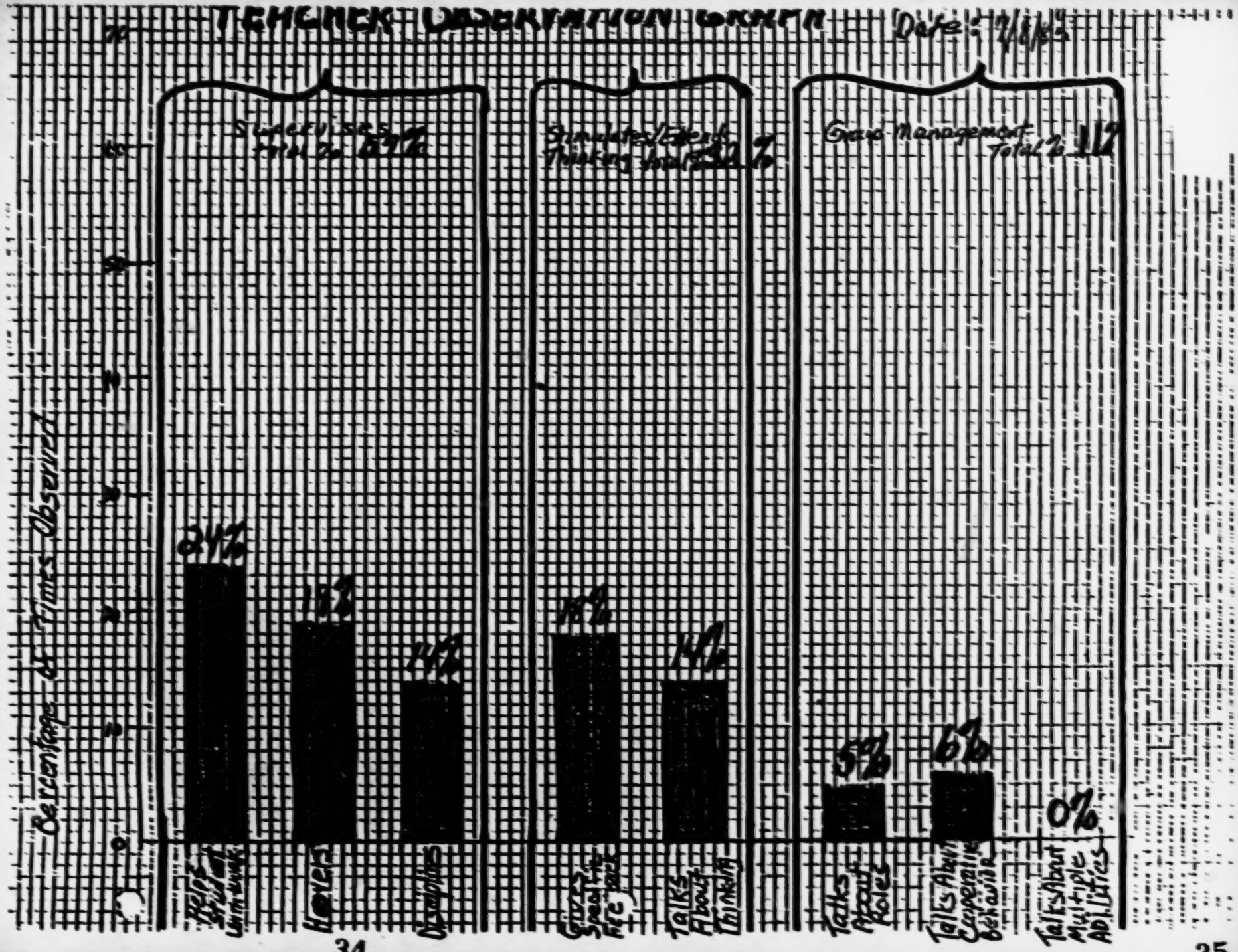
PART I: Observation during orientation and wrap-up. Check the topics discussed and briefly describe what you observed.

	TOPICS	DESCRIPTION
	Science Concepts	
	Problem-Solving Strategies	
	Cooperative Behaviors	
	Group Roles	
	Multiple Abilities	

TEACHER OBSERVATION FORM-----2

PART II: Observation while students work at learning centers.

		Tot.	%
SUPERVISES:			
Helps Students with work___			
"Hovers"_____			
Disciplines_____			
STIMULATES/EXTENDS THINKING			
Gives Specific Feedback___			
Talks about Thinking _____			
GROUP MANAGEMENT			
Talk About Roles_____			
Talks About Cooperative Behaviors_____			
Talks About Multiple Abilities_____			
	OVERALL TOTALS		


TECHNICK OBSERVATION SHEET
Date: 7/8/85
Percentage of Times Observed
Supervise Total is 84%
Stimulate/Lead Thinking Total is 42%
Good Management Total is 112
Helps Students Understand
Answers
Questions
Gives Specific Praise
Talks About Thinking
Talks About Roles
Talks About Supportive Behavior
Talks About Multiple Abilities
0%

APPENDIX B

MEETING TAMER
MEETING AGENDA ORGANIZER

FINDING OUT: DESCUBRIMIENTO

PARTICIPANTS

_____ _____

_____ _____

_____ _____

DATE

_____

MEETING TAMER

ABENCA CHECKLIST

I. OVERALL SYSTEM

Manipulative Materials

___ Problem with materials?

___ Certain materials needed?

___ Organization/storage of materials?

Learning Centers

___ 2 to 5 students per group?

___ Work space layout ok?

___ Display facilities?

___ Information sources?

Learning Materials

___ Completion of worksheets?

___ Feedback on worksheets?

___ Using activity cards?

___ Other?

II. STUDENT BEHAVIOR/ROLES

___ Proportion on-task/off-task ok?

___ Using problem-solving skills? Reinforcement needed?

___ Using cooperative skills? Reinforcement needed?

___ Using Multiple Abilities? Reinforcement needed?

___ Student roles ok? Reinforcement needed?

___ Rate of talking/manipulating ok?

___ Discussion of individual students?

___ Discipline problems?

___ Other?

III. TEACHER/ASSISTANT ROLES

___ Orientation topics/problems?

___ Wrap-up topics/problems?

___ Hovering?

___ Stimulating/extending thinking?

___ Communication strategies?

___ Other

NOTES ON DECISIONS MADE TODAY

RESPONSIBILITIES ASSIGNED
(Who's to do What to Whom, When?)

APPENDIX C

MANAGEMENT SYSTEMS CHECKLIST

MANAGEMENT SYSTEMS CHECKLIST

NAME_____FO/D UNIT_____ DATE_____

HOW MANY TIMES IN THE PAST 2 WEEKS HAVE YOU:

	0	1	2	3	MORE
1. Discussed FO/D with your assistant	x	x	x	x	x
2. Been observed by your principal during FO/D?	x	x	x	x	x
3. Met with your principal about FO/D?	x	x	x	x	x
4. Met with your FO/D supportive evaluator?	x	x	x	x	x
5. Met with other FO/D teachers in your school?	x	x	x	x	x
6. Used the Meeting Tamer with other teachers?	x	x	x	x	x
7. Observed your FO/D assistant?	x	x	x	x	x
8. Given feedback to your assistant?	x	x	x	x	x
9. Used the Meeting Tamer with your assistant?	x	x	x	x	x

PLEASE PUT A CHECK BESIDE EACH TOPIC THAT HAS BEEN IMPORTANT IN DISCUSSIONS WITH YOUR ASSISTANT IN THE PAST 2 WEEKS:

10. Materials
11. Worksheets
12. Students On/off Task
13. Cooperation
14. Student Roles
15. Individual Student Needs
16. Orientation Topics/Problems
17. Hovering
18. Communication Strategies.
19. Learning Centers
20. Activity Cards
21. Student Problem-Solving
22. Multiple Abilities
23. Rate of Talking and Working Together
24. Discipline Problems
25. Wrap-up Topics/Problems
26. Stimulating/Extending Thinking

THANK YOU FOR YOUR COOPERATION IN ANSWERING THIS QUESTIONNAIRE

APPENDIX D

TEACHER OBSERVATION INSTRUMENT USED FOR RESEARCH

Teacher Observation

FINDING OUT/DESCUBRIMIENTO

Teacher _____ Orientation yes ___ no___

Date _____ Wrap-Up yes____ no___

Observer _____ Learning Centers Only yes___ no___

(OBSERVE EACH TEACHER FOR 10 MINUTES) Time at start of obs. _____

1. Facilitates completion of task _____

2. Gives information _____
(instructs)

3. Asks Questions _____
(substantive)

4. Talks about child's thinking _____

FEEDBACK

5A. Gives specific academic praise _____
(TO INDIVIDUAL)

5B. Other specific feedback _____

6. Talks about cooperative behaviors _____

MULTIPLE ABILITIES

7A. Assigns competence on 3 M-Abilities _____
(TO INDIVIDUAL)

7B. Other Discussion of multi-abilities _____

8. Talks about roles in groups _____

9. Disciplines (student or class) _____

10. Extends activity _____